TOSTSD-98A0860

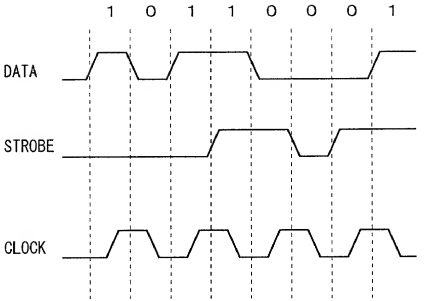

FIG. 1

0988585 "0613001

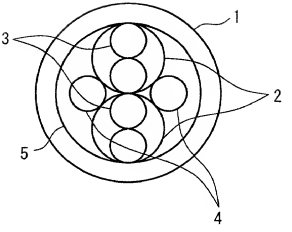

FIG. 2

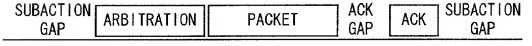

FIG. 4

0868586.061901

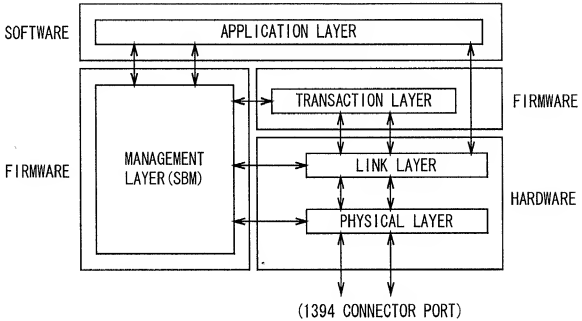

FIG. 3

US 6,658,469 B1

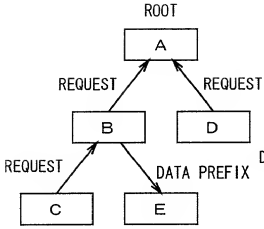

FIG. 5A

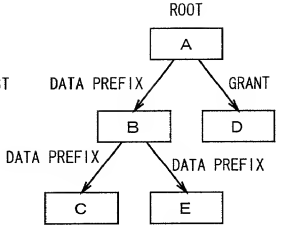

FIG. 5B

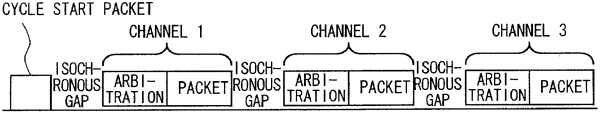

FIG. 6

T06T90" 989H866D

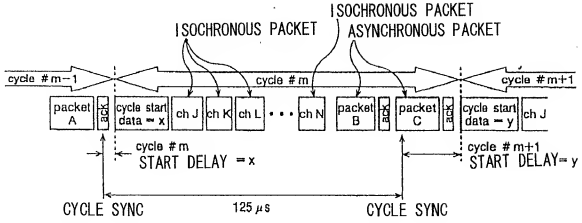

FIG. 7

T06T90"959k8860

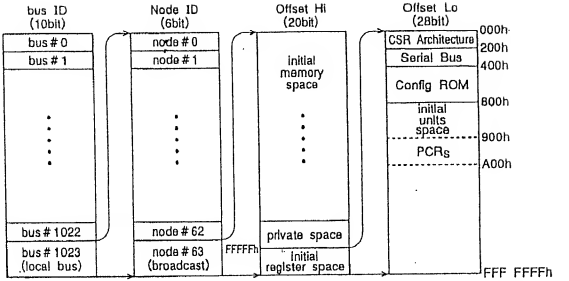

FIG. 8

EP 1 061 701 A2

OFFSET	NAME	OPERATION
000h	STATE_CLEAR	STATE AND CONTROL INFORMATION
004h	STATE_SET	SETS STATE_CLEAR BIT
008h	NODE_IDs	INDICATES 16-BIT NODE ID
00Ch	RESET_START	STARTS COMMAND RESET
018h-01Ch	SPLIT_TIMEOUT	SPECIFIES SPLIT TIMEOUT
200h	CYCLE_TIME	CYCLE TIME
210h	BUSY_TIMEOUT	SPECIFIES RETRY TIMEOUT
21Ch	BUS_MANAGER	INDICATES BUS MANAGER ID
220h	BANDWIDTH_AVAILABLE	INDICATES BANDWIDTH AVAILABLE FOR ISOCHRONOUS COMMUNICATION
224h-228h	CHANNELS_AVAILABLE	INDICATES AVAILABLE STATE OF EACH CHANNEL

FIG. 9

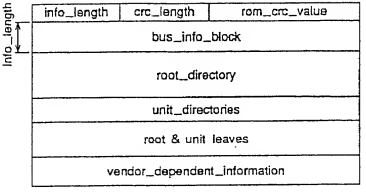
info_length
info_length
crc_length
rom_crc_value
bus_info_block
root_directory
unit_directories
root & unit leaves
vendor_dependent_information

FIG. 10

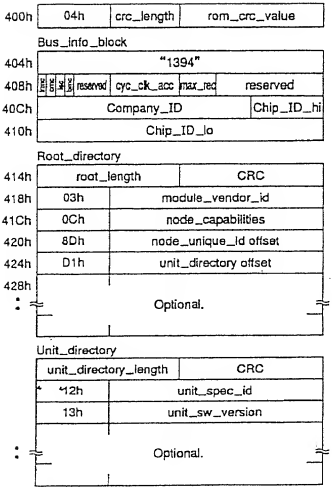
400h
04h
crc_length
rom_crc_value
Bus_info_block
404h
"1394"
408h
irmc
cmc
isc
bmc
reserved
cyc_clk_acc
max_rec
reserved
40Ch
Company_ID
Chip_ID_hi
410h
Chip_ID_lo
Root_directory
414h
root_length
CRC
418h
03h
module_vendor_id
41Ch
0Ch
node_capabilities
420h
8Dh
node_unique_id offset
424h
D1h
unit_directory offset
428h
Optional.
Unit_directory
unit_directory_length
CRC
12h
unit_spec_id
13h
unit_sw_version
Optional.

FIG. 11

EP 0 993 156 A2

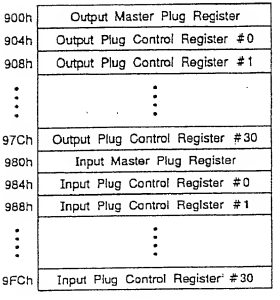

FIG. 12

FIG. 13A

oMPR

data rate capability	broadcast channel base	non-persistent extension field	persistent extension field	reserved	number of output plugs
2	6	8	8	3	5 (bit)

FIG. 13B

oPCR [n]

on-line	broadcast connection counter	point-to-point connection counter	reserved	channel number	data rate	overhead ID	payload
1	1	6	2	6	2	4	10 (bit)

FIG. 13C

iMPR

data rate capability	reserved	non-persistent extension field	persistent extension field	reserved	number of input plugs
2	6	8	8	3	5 (bit)

FIG. 13D

iPCR [n]

on-line	broadcast connection counter	point-to-point connection counter	reserved	channel number	reserved
1	1	6	2	6	16 (bit)

T06130 "359H8860

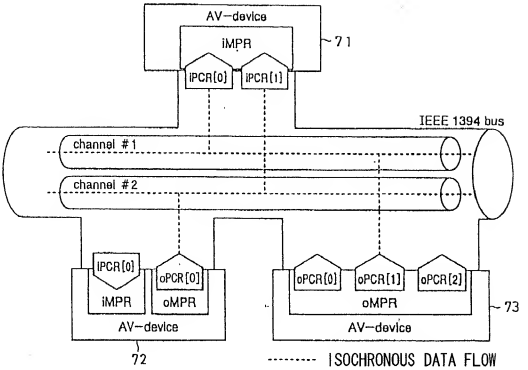

FIG. 14

09884686.061901

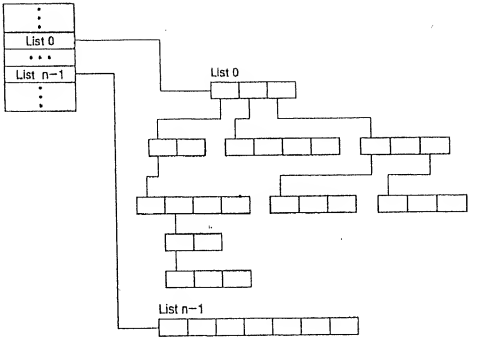

FIG. 15

The General Subunit Identifier Descriptor	
address	contents
00 00_{16}	descriptor_length
00 01_{16}	
00 02_{16}	generation_ID
00 03_{16}	size_of_list_ID
00 04_{16}	size_of_object_ID
00 05_{16}	size_of_object_position
00 06_{16}	number_of_root_object_lists (n)
00 07_{16}	
00 08_{16}	root_object_list_id_0
•	
•	•
•	•
•	root_object_list_id_n−1
•	
•	
•	subunit_dependent_length
•	
•	
•	
•	subunit_dependent_information
•	
•	
•	manufacturer_dependent_length
•	
•	
•	manufacturer_dependent_information
•	

FIG. 16

generation_ID values	
generation_ID	meaning
00_{16}	Data structures and command sets as specified in the AV/C General Specification, version 3.0
all others	reserved for future specification

FIG. 17

List ID Value Assignment Ranges	
range of values	list definition
0000_{16}–$0FFF_{16}$	reserved
1000_{16}–$3FFF_{16}$	subunit–type dependent
4000_{16}–$FFFF_{16}$	reserved
$1\ 0000_{16}$–max list ID value	subunit–type dependent

FIG. 18

T06T90'9994888

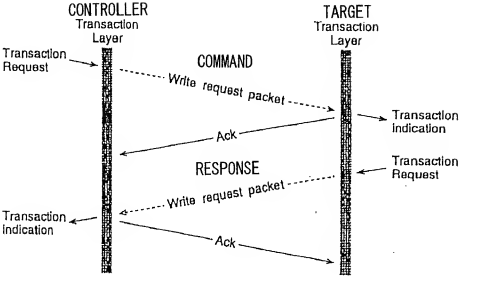

FIG. 19

T06T90' 989h8S60

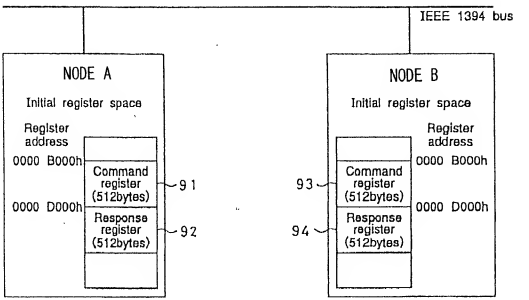

FIG. 20

T06T90'989h8960

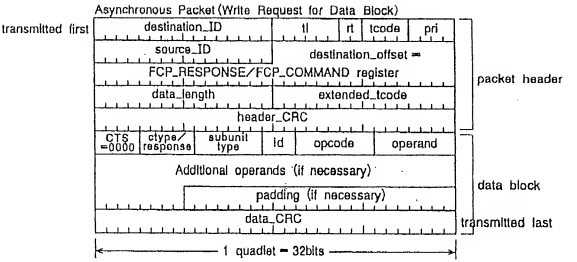

FIG. 21

T06T90"9894886O

ctype/response

Command	0000	CONTROL
	0001	STATUS
	0010	SPECIFIC INQUIRY
	0011	NOTIFY
	0100	GENERAL INQUIRY
	0101	
	⋮	(reserved for future specification)
	0111	
Response	1000	NOT IMPLEMENTED
	1001	ACCEPTED
	1010	REJECTED
	1011	IN TRANSITION
	1100	IMPLEMENTED/STABLE
	1101	CHANGED
	1110	(reserved for future specification)
	1111	INTERIM

FIG. 22A

subunit_type

00000	Video monitor
⋮	(reserved)
00011	Disc recorder/ Player
00100	Tape recorder/ Player
00101	Tuner
00111	Video Camera
⋮	(reserved)
11100	Vendor unique
11101	reserved
11110	Subunit type extended to next byte
11111	Unit*

FIG. 22B

opcode : Operation Code

00h	VENDOR-DEPENDENT
50h	SEARCH MODE
51h	TIMECODE
52h	ATN
60h	OPEN MIC
61h	READ MIC
62h	WRITE MIC
C1h	LOAD MEDIUM
C2h	RECORD
C3h	PLAY
C4h	WIND
⋮	⋮

FIG. 22C

T06T90'9894:8860

FIG. 23A

AV/C	control	tape recorder /player	IDO	PLAY	FORWARD
CTS= 0000	ctype= 0000	subunit type= 00100	id= 000	opcode= C3h	operand= 75h

FIG. 23B

AV/C	accepted	tape recorder /player	IDO	PLAY	FORWARD
CTS= 0000	response =1001	subunit type= 00100	id= 000	opcode= C3h	operand= 75h

T06T90"983N8860

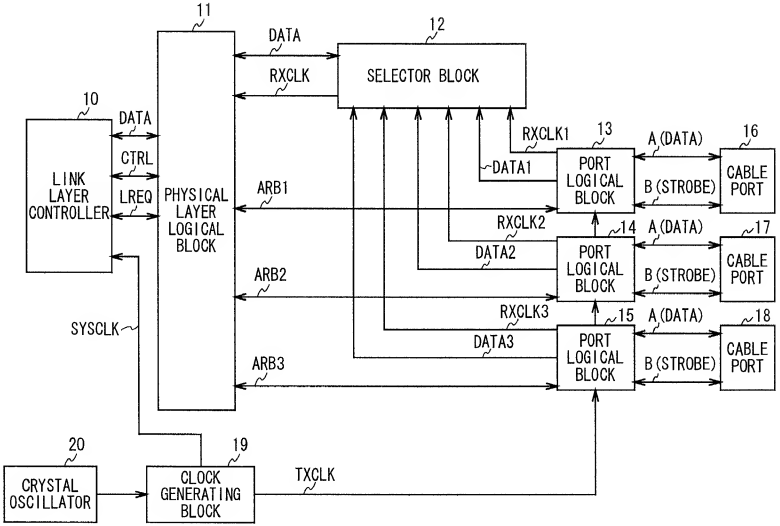

FIG. 24

TRANSMISSION ARBITRATION SIGNAL A (Arb_A_Tx)	DRIVER		REMARKS
	Strb_Tx	Strb_Enable	
Z	–	0	TPA DRIVER: INACTIVE
0	0	1	TPA DRIVER: ACTIVE, STROBE: LOW
1	1	1	TPA DRIVER: ACTIVE, STROBE: HIGH

FIG. 25

TRANSMISSION ARBITRATION SIGNAL B (Arb_B_Tx)	DRIVER		REMARKS
	Data_Tx	Data_Enable	
Z	–	0	TPB DRIVER: INACTIVE
0	0	1	TPB DRIVER: ACTIVE, STROBE: LOW
1	1	1	TPB DRIVER: ACTIVE, STROBE: HIGH

FIG. 26

T05790*999h8260

RECEIVED ARBITRATION COMPARISON VALUE (Arb_n_Rx)'	ARBITRATION RECEIVED FROM ITS PORT (Arb_n_Tx)'	INTERPOLATED ARBITRATION SIGNAL (Arb_n)'	REMARKS
			'n=AorB THIS TABLE APPLIES TO BOTH A AND B.
Z	Z	Z	IF THIS PORT HAS TRANSMITTED Z, RECEIVED SIGNAL IS EQUIVALENT TO SIGNAL TRANSMITTED BY PORT AT OTHER END OF CABLE.
0	Z	0	
1	Z	1	
Z	0	1	IF COMPARATOR RECEIVES Z WHILE THIS PORT TRANSMITS 0, OTHER PORT TRANSMITS 1.
0	0	0	OTHER PORT TRANSMITS 0 OR Z.
Z	1	1	OTHER PORT TRANSMITS 0.
1	1	1	OTHER PORT TRANSMITS 1 OR Z.

FIG. 27

T06T90'99%8860

ARBITRATION TRANSMISSION		LINE STATE NAME	REMARKS
(Arb_A_Tx)	(Arb_B_Tx)		
Z	Z	IDLE	TRANSMITTED TO INDICATE GAP.
Z	0	TX_REQUEST	TRANSMITTED TO PARENT NODE TO REQUEST BUS.
		TX_GRANT	TRANSMITTED TO CHILD NODE WHEN BUS IS GIVEN.
0	Z	TX_PARENT_NOTIFY	TRANSMITTED TO NODE OF PARENT CANDIDATE IN Tree_ID PHASE.
0	1	TX_DATA_PREFIX	TRANSMITTED BEFORE PACKET DATA OR BETWEEN PACKET DATA OF SUBACTION CONNECTED.
1	Z	TX_CHILD_NOTIFY	TRANSMITTED TO CHILD NODE TO ACKNOWLEDGE PARENT_NOTIFY.
		TX_IDENT_DONE	TRANSMITTED TO PARENT NODE TO INDICATE THAT self_ID PHASE IS COMPLETED.
1	0	TX_DATA_END	TRANSMITTED AT END TIME OF PACKET TRANSFER.
1	1	BUS_RESET	TRANSMITTED TO RECONSTRUCT THE BUS.

FIG. 28

T06T90*989H8860

RECEPTION ARBITRATION SIGNAL		LINE STATE NAME	REMARKS
(Arb_A_Rx)	(Arb_B_Tx)		
Z	Z	IDLE	PHY OF ADJACENT NODE CONNECTED IS NOT IN OPERATION.
Z	0	RX_PARENT_NOTIFY	PHY OF ADJACENT NODE CONNECTED IS BECOMING CHILD NODE.
		RX_REQUEST_CANCEL	PHY OF ADJACENT NODE CONNECTED HAS ABANDONED REQUEST.
Z	1	RX_IDENT_DONE	PHY OF CHILD NODE HAS COMPLETED self_ID PHASE.
0	Z	RX_SELF_ID_GRANT	PHY OF PARENT NODE GIVES BUS FOR self_ID.
		RX_REQUEST	PHY OF CHILD NODE REQUESTS BUS.
0	0	RX_ROOT_CONTENTION	PHYS OF CHILD NODE AND ADJACENT NODE CONNECTED ARE BOTH BECOMING CHILD NODE.
		RX_GRANT	PHY OF PARENT NODE GIVES BUS CONTROL.
0	1	RX_PARENT_HANDSHAKE	PHY OF ADJACENT NODE CONNECTED ACKNOWLEDGES PARENT_NOTIFY.
		RX_DATA_END	PHY OF ADJACENT NODE CONNECTED ENDS TRANSMISSION OF DATA BLOCK AND RELEASES BUS.
1	Z	RX_CHILD_HANDSAHKE	PHY OF ADJACENT NODE CONNECTED ACKNOWLEDGES TX_CHILD_NOTIFY.
1	0	RX_DATA_PREFIX	PHY OF ADJACENT NODE CONNECTED IS TRANSMITTING PACKET DATA OR FURTHER TRANSMITTING DATA AFTER END OF TRANSMITTING DATA BLOCK.
1	1	BUS_RESET	TRANSMITTED TO RECONSTRUCT BUS.

FIG. 29

T06T90'989%8860

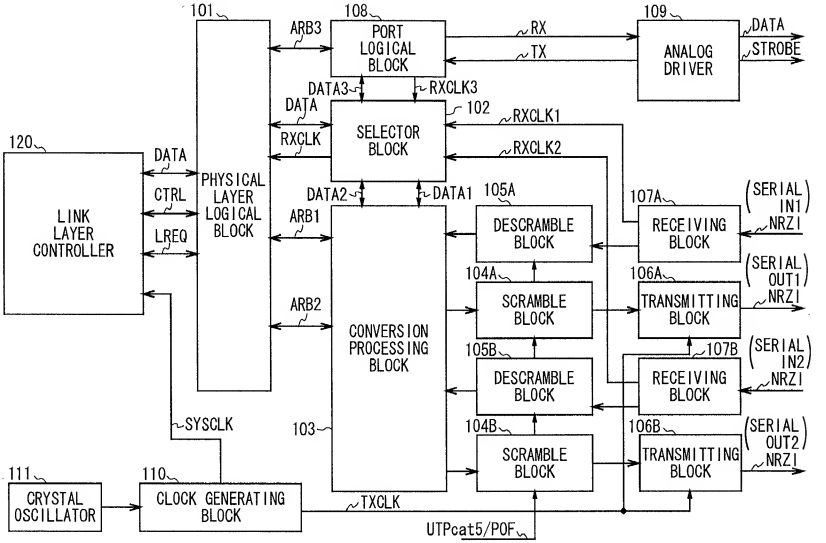

FIG. 30

TRANSMISSION SYMBOL	ARBITRATION STATUS
11111	IDEL
00100	TX_REQUEST
	TX_GRANT
00101	TX_PARENT_NOTIFY
11000 10001	TX_DATA_PREFIX
00111	TX_CHILD_NOTIFY
	TX_IDENT_DONE
01101	TX_DATA_END
00000 11111	BUS_RESET

FIG. 31

11111	11111	IDLE
00101	11111	RX_PARENT_NOTIFY
11111	00100	RX_REQUEST_CANCEL
00111	11111	RX_IDENT_DONE
00100	11111	RX_SELF_ID_GRANT
00100	11111	RX_REQUEST
00101	00101	RX_ROOT_CONTENTION
00100	00100	RX_GRANT
00111	00101	RX_PARENT_HANDSHAKE
01101	11111	RX_DATA_END
11111	00111	RX_CHILD_HANDSHAKE
11000 10001	00100	RX_DATA_PREFIX
11000 10001	00111	RX_DATA_PREFIX
11000 10001	11111	RX_DATA_PREFIX
00000 11111	(do'nt care)	BUS_RESET

FIG. 32

HEXADECIMAL	BINARY	SYMBOL
0	0000	11110
1	0001	01001
2	0010	10100
3	0011	10101
4	0100	01010
5	0101	01011
6	0110	01110
7	0111	01111
8	1000	10010
9	1001	10011
A	1010	10110
B	1011	10111
C	1100	11010
D	1101	11011
E	1110	11100
F	1111	11101

FIG. 33

T96T90'989h8860

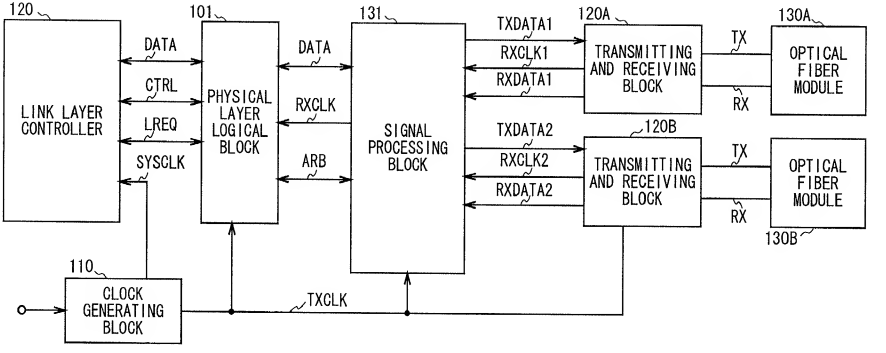

FIG. 34

T06T90"999h3860

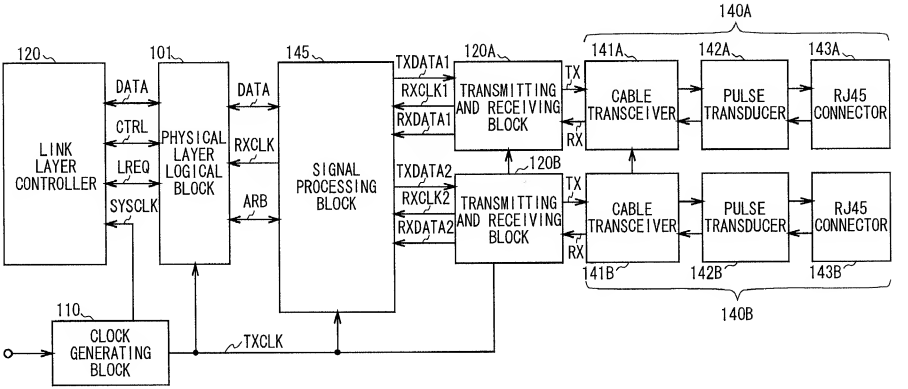

FIG. 35

TOGT90'989h8860

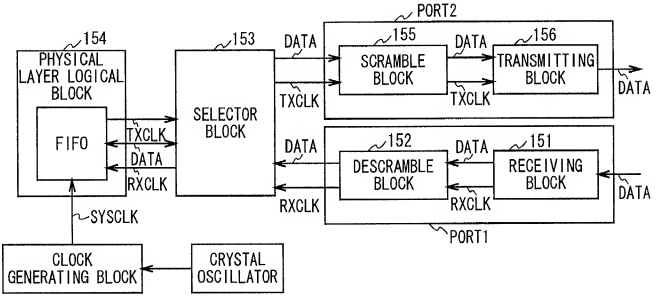

FIG. 36

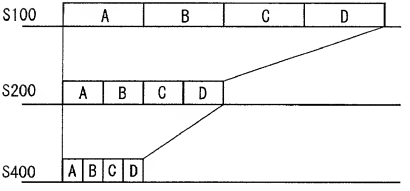
S100
A
B
C
D
S200
A
B
C
D
S400
A
B
C
D

FIG. 37

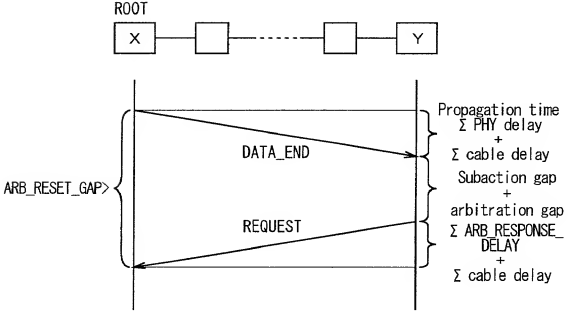
ROOT
X
Y
DATA_END
REQUEST
ARB_RESET_GAP>
Propagation time
Σ PHY delay
+
Σ cable delay
Subaction gap
+
arbitration gap
Σ ARB_RESPONSE_
DELAY
+
Σ cable delay

FIG. 38

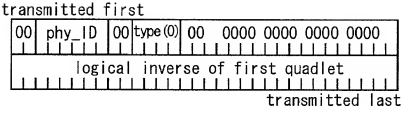
transmitted first
00
phy_ID
00
type (0)
00
0000 0000 0000 0000
logical inverse of first quadlet
transmitted last

FIG. 39

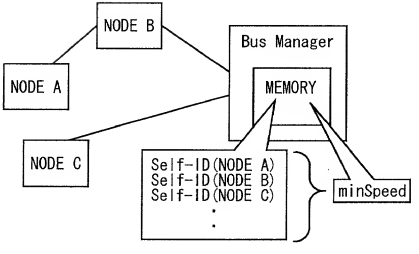
NODE B
Bus Manager
NODE A
MEMORY
NODE C
Self-ID(NODE A)
Self-ID(NODE B)
Self-ID(NODE C)
minSpeed

FIG. 40

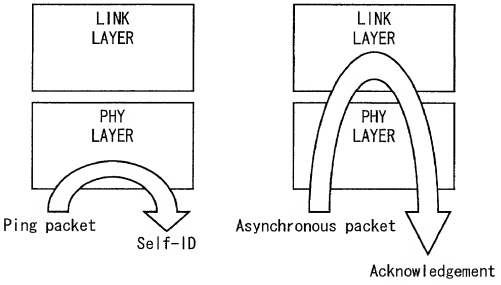
LINK
LAYER
PHY
LAYER
Ping packet
Self-ID
LINK
LAYER
PHY
LAYER
Asynchronous packet
Acknowledgement

FIG. 41